Space Weather Forecast

Issued on Saturday, 03 February 2024 at 13:19 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of Minor Radio Blackouts. Peak chance of Minor Geomagnetic Storm Sunday 04 February.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with only common-class flares.

There are now seven sunspot regions on the disc. A region in the southwest has changed the most significantly, quickly growing and increasing in complexity over the last 24 hours. A spot in the southeast of the disc has produced a number of flares in the last 24 hours despite its relative simplicity. Other spots have remained fairly stable.

Overall, at the time of writing, no new CMEs (coronal mass ejections) appear to carry any Earth-directed component, however further analyses are being carried out to confirm this.

Solar Wind / Geomagnetic Activity: Solar winds were reflective of a slow solar wind regime. The solar wind speed declined slightly within background levels. The magnetic field was weak throughout, with only weak variation in the important north-south component. The net result of the above solar wind measures was provisionally quiet geomagnetic activity throughout.

Energetic Particles / Solar Radiation: Solar radiation levels remain slightly elevated above background levels following the Moderate class X-ray flare on 29 Jan from a sunspot now several days onto the far side. This enhancement remains well below the S1/Minor Radiation Storm threshold.

Four-Day Space Weather Forecast Summary

Solar Activity: Overall activity is most likely to be low, but with an increasing chance of isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: A CME which left the Sun at 01/0743UTC may deliver a glancing blow either late Saturday 03 February or more likely early Sunday 04 February. In addition there may be also be a fast wind enhancement during this period, although likely more biased to effects on 04 into 05 February.

Geomagnetic activity is expected to start and end the four-day period quiet, with perhaps a chance of Minor Geomagnetic Storm G1 on Sunday 04 February, and a slight chance of similar activity on 03 and 05 February.

Energetic Particles / Solar Radiation: High energy proton flux is expected to remain below the S1/Minor Radiation Storm level, with a daily slight chance of exceeding the S1 threshold during the period.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	25	15	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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